



NTSB National Transportation Safety Board

Office of Highway Safety

Oversight of Construction Projects

George Black

Introduction

- CDOT's limited oversight of the construction project
- Construction policies
 - State
 - FHWA
 - AASHTO

CDOT Oversight

- CDOT did *NOT*
 - Prequalify the subcontractor
 - Require written and approved plan
 - Intervene despite problems
 - Require active monitoring

Subcontractor Prequalification

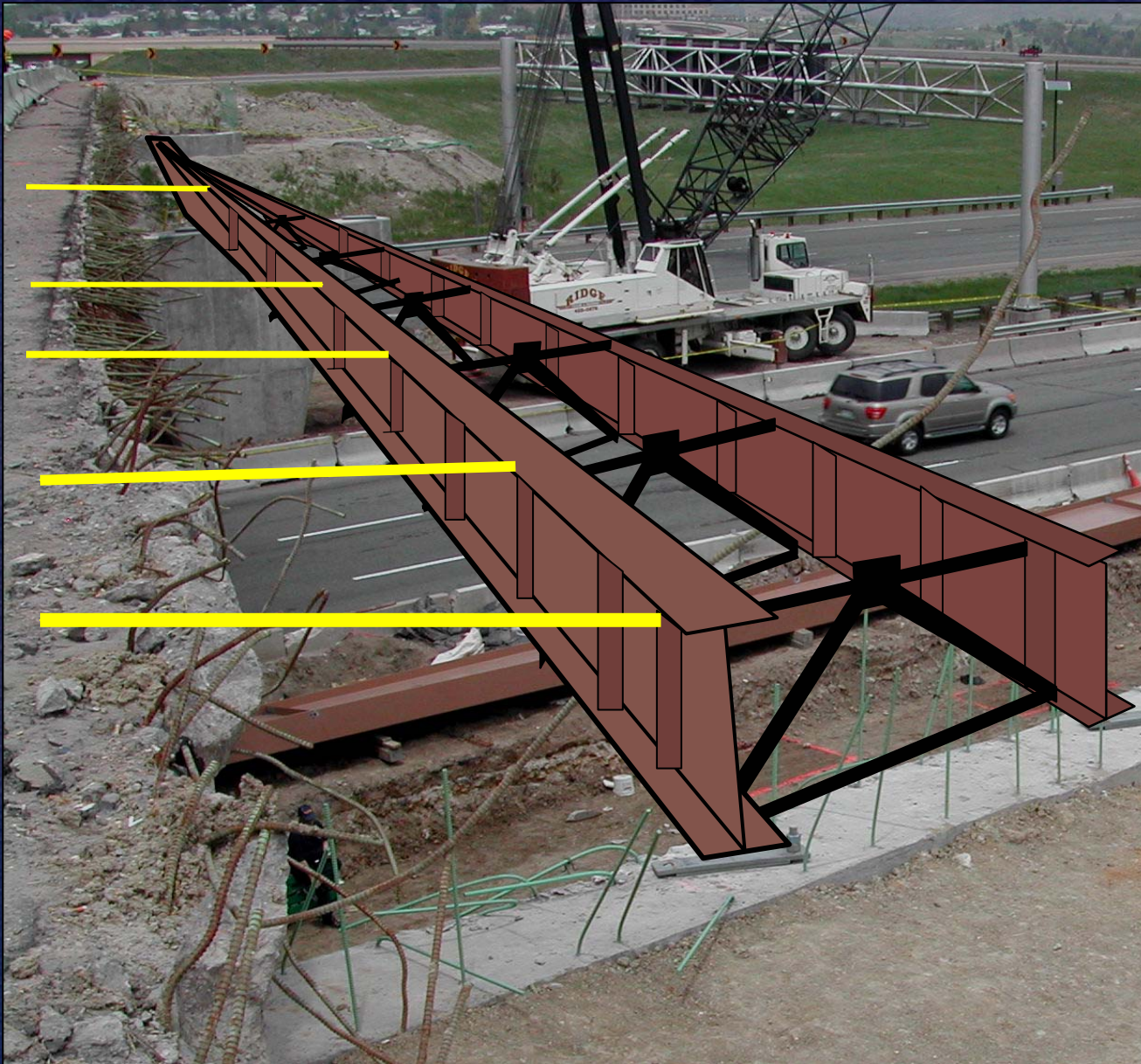
- CDOT did NOT require prequalification of subcontractors
 - 70% of work can be done by subcontractors
- Ridge had not performed highway bridge construction for 14 years

Bracing Plan Requirements

- Ridge believed its tasks were regulated by OSHA
- OSHA requires bracing plans but not approval by a P.E.
- CDOT did not require a P.E. to approve temporary bracing plans

Bracing Plan

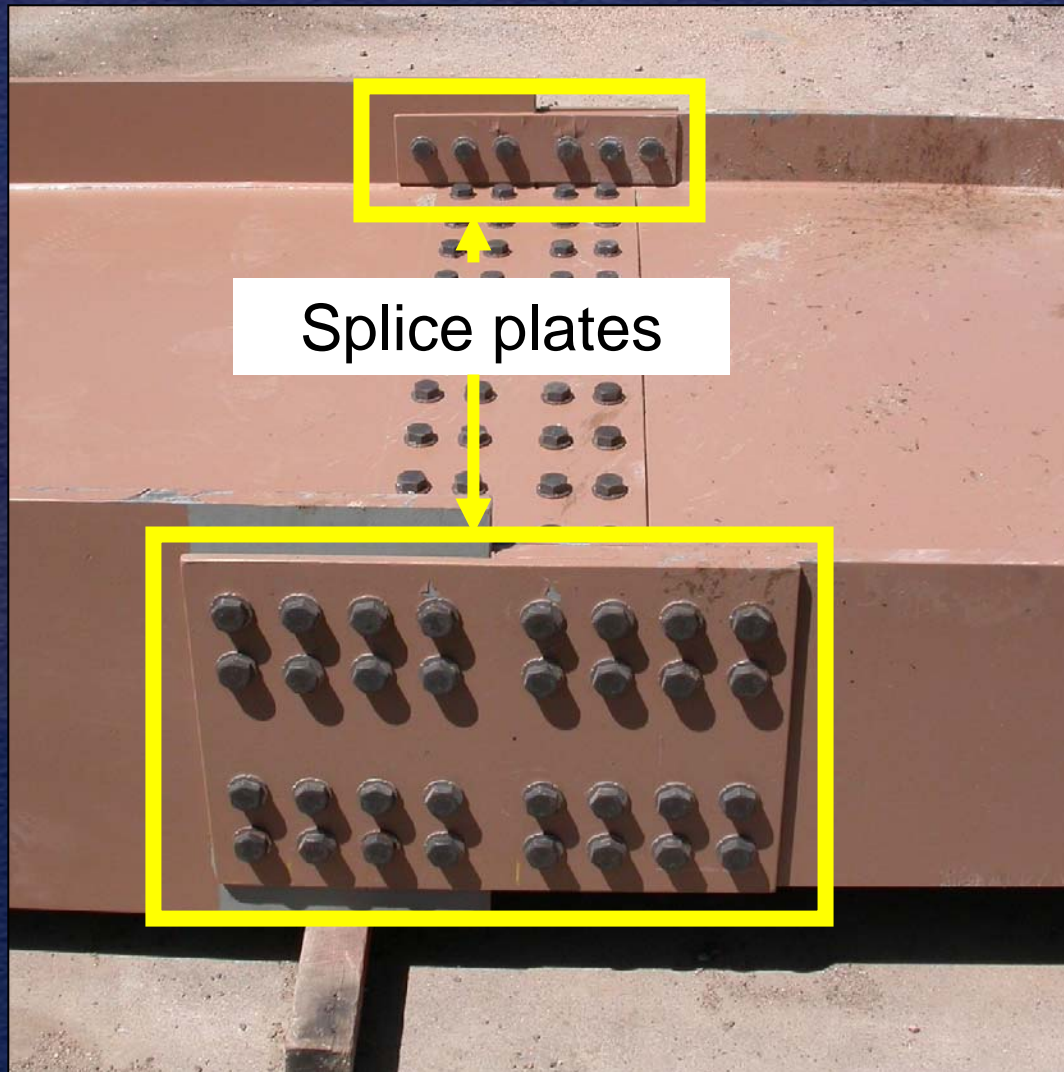
- Prepared by Ridge safety coordinator
- Had no formal engineering training



Construction Errors

- Splicing problems
 - Wrong tools to
 - Remove the shipping bolts
 - Tighten the splicing bolts
 - Lost several hours

Girder Splice



Construction Errors (Cont'd.)

- Hoisting problems
 - One section was hoisted backwards
 - Time was lost verifying that it was backwards and correcting the error



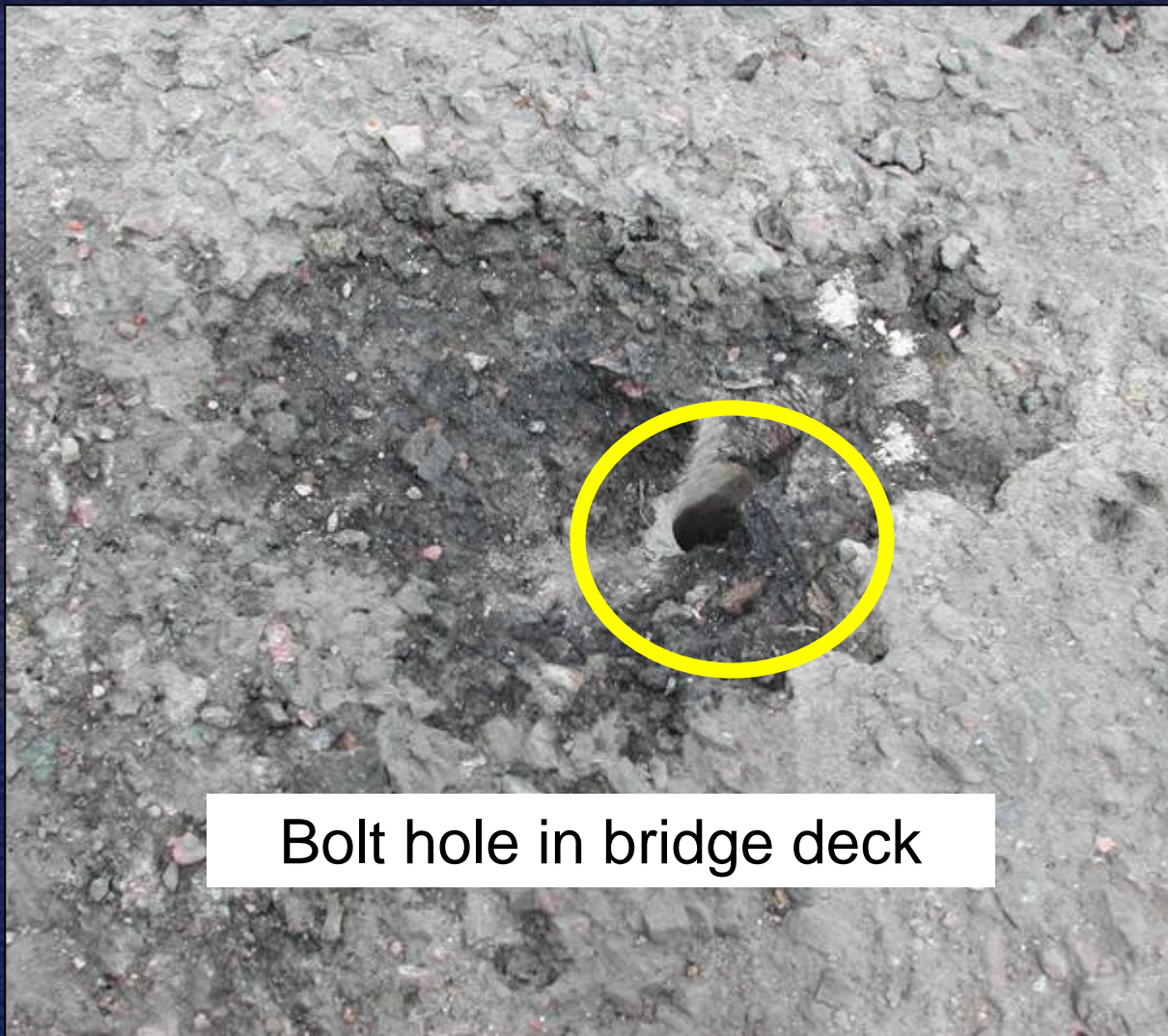
Fabricator's piece mark stamped into the girder



Girder identification number painted by shipping crew

Construction Errors (Cont'd.)

- Bolting errors
 - Bore holes were too big and too shallow
 - Bolts were too long
 - Pounding bent the bolts



Bolt hole in bridge deck





On Site May 11 and 12

- CDOT had
 - 2 managers
 - 2 inspectors

Morning of May 12

- CDOT managers left the site *without*
 - Checking the bracing scheme
 - Checking the weather forecast
 - Establishing a means of monitoring the stability of the girder and bracing scheme

CDOT Oversight Summary

- CDOT did *NOT*
 - Prequalify the subcontractor
 - Require a written and P.E.-approved plan
 - Intervene despite errors
 - Ensure there was a monitoring plan

CDOT Oversight Policy

- Routine practice not to
 - Tell contractor how to do work
 - Intervene

CDOT Oversight Policy (Cont'd.)

- CDOT *Specifications* state:

“The inspector is not authorized to issue instructions contrary to the contract or to act as foreman for the Contractor”
- CDOT design plans state:

“The Contractor shall be responsible for the stability of the structure during construction”

CDOT Oversight Policy (Cont'd.)

- *CDOT Construction Manual* states:

“Falsework design and construction are the contractor’s responsibility”

“The Contractor is responsible for providing adequate bracing of all formwork, and CDOT personnel cannot dictate construction methods”

AASHTO Oversight Guidance

- AASHTO's *Construction Manual* states:
“The [State] Project Engineer shall in no way attempt to supervise work for the Contractor”

Other States' Oversight Policy

- 15 States said that allowing a contractor to work without interference is common
- They cited the following reasons:
 - Reduce change order costs
 - Minimize tort liability

CDOT's Postaccident Actions

- Require an erection plan, approved by a P.E., 4 weeks before installation
- Require a pre-installation conference 2 weeks before installation
- Require P.E.-written approval of each phase of installation
- Require daily inspections and written documentation of same by the contractor

Summary

- No State should relinquish its responsibility to ensure the safety of construction workers and the traveling public by yielding its oversight role



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